ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-WSEB-2-15 2002

Distillation Treatment of Drinking Water

Distillation is a treatment process that uses heat energy rather than chemicals to purify drinking water.

Method Of Treatment
Distillation is a two-step process. The process begins by boiling water in a chamber to produce steam. In the second step, the steam is moved to a second chamber where it is condensed back to liquid water. The water is than stored until needed.

Target Contaminants
Distillation is effective in **disinfecting** water and in the removal of **inorganic contaminants**. Examples of inorganic minerals removable by distillation include arsenic, lead, manganese, uranium and most other minerals. Distillation is **not effective** in removing many **organics** (carbon based contaminants) from water, particularly industrial solvents or hydrocarbons. These solvents and hydrocarbons have boiling temperatures similar to that of water, and thus will vaporize and condense just as the water does.

Size and Cost
A small distillation treatment device, produces 3-5 gallons per day (gpd). Such systems are often installed on a counter top or under a sink. Distillation systems cost approximately $1,000 installed and warranted by others. Operational costs, primarily for energy, would likely average around $150 per year for a 3-5 gpd size.

A typical family of four uses approximately 200 gallons of water per day for all household uses. A distillation treatment device, producing water for an entire household, is typically not feasible because of both high capital and operational costs.

Reject Heat
The typical distillation system uses heat to evaporate water. Some of this heat is lost to the surrounding kitchen space. This heat can be annoying during the hot summer months. During the winter this heat can be valuable in heating the home.

Residual Disinfection
The presence of a chemical disinfectant residual in drinking water is valued by some to demonstrate that disinfectant was actually accomplished. There is no residual disinfection in a distillation processes.

Monitoring Water Quality
All treatment systems should be verified for their effectiveness by laboratory testing for the

target contaminant(s). Distillation treatment is highly reliably for disinfection and inorganic contaminant removal.

Maintenance Of Distillation Devices

The boiling chamber of a distillation device accumulates mineral contaminant with time and needs to be cleaned periodically. The needed frequency will depend on the level of minerals in the water and the amount of water being used. In some cases the mineral buildup can be dissolved with pure water. In other cases, the mineral buildup needs to be dissolved by dilute acids cleaners in a heated condition. The cleaning frequency averages quarterly.

For More Information

For further information, please call the DES Water Supply Engineering Bureau at 271-3139. We would appreciate your suggestions concerning this fact sheet. For an overall listing of water supply related fact sheets, please request fact sheet **WD-WSEB-15-2**. Please check the DES internet site annually for any updates. Drinking water fact sheets are available through the DES web site at: **http://www.des.nh.gov/wseb** then select: **fact sheets**. ***04/01***